REMARKS

In the July 26, 2005 Office Action, all of the claims stand rejected in view of prior art. No other objections or rejections were made in the Office Action.

Status of Claims and Amendments

In response to the July 26, 2005 Office Action, Applicants have amended the claims as indicated above. Thus, claims 1-7 and 9-38 are pending, with claims 1 and 34-38 being the only independent claims. Reexamination and reconsideration of the pending claims are respectfully requested in view of the above amendments and the following comments.

Rejections - 35 U.S.C. § 103

In paragraph 3 of the Office Action, claims 1-38 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Japanese Patent Publication No. 08-155249 (Tetsuya et al) in view of U.S. Patent No. 6,455,014 (Hammerstrom et al.) or U.S. Patent Application Publication No. 2001/0043890 (Son). In response, Applicants have amended independent claim 1 to incorporate claim 8 into independent form.

More specifically, independent claim 1 now clearly recites a needle-shaped effective length L and an electrode gap G. Clearly this arrangement is ***not*** disclosed or suggested by Tesuya et al., Hammerstrom et al., Son or any other prior art of record. It is well settled in U.S. patent law that the mere fact that the prior art can be modified does ***not*** make the modification obvious, unless the prior art ***suggests*** the desirability of the modification.

The purpose of this invention is to create a stable streamer discharge without using special or expensive power sources and to contrive an electrode system to achieve this purpose. In detail, the point angle θ of the first electrode is set more than 30 degrees and not more than 90 degrees. Furthermore, a ratio L/G between a needle shaped effective link L of

the first electrode and an electrode gap G is less than 0.2 and not more than 1.5. With such a structure, a streamer electrode is able to stably discharge.

In contrast, Tetsuya et al. discloses a pulse generating power supply and creates a fine spark discharge unlike the streamer discharge of the present invention. Therefore, ***it is not necessary to limit the shape of the electrode in Tetsuya et al.*** Paragraph 20 of Tetsuya et al., which was cited in the Office Action, only discloses that the point of the discharge needle is sharp and the discharge voltage and the current link is between 0.1 cm to 1 cm. Furthermore, Tetsuya et al. does not disclose a distance between the electrodes. Thus, the present invention and Tetsuya et al. differ in the discharge configuration. Specifically, Tetsuya et al. does not disclose technology to produce a stable streamer discharge.

Regarding independent claims 34-38, the Office Action states that it would be obvious to one of ordinary skill in the art to utilize the point angle limitations in the system of Tetsuya et al. The Office Action provides the motivation for doing so as providing a point or needle-like electrode with a specific surface area.

Applicants respectfully submit that this statement does not address why one of ordinary skill in the art would be motivated to modify the system of Tetsuya et al. Tetsuya et al discloses a system for creating a fine spark discharge. Therefore, ***it is not necessary to limit the shape of the electrode***. The mere fact that paragraph 20 of Tetsuya et al. discloses that the point of a discharge needle 16 has a diameter of 0.1cm-1cm does not suggest providing a point angle θ of not less than 30 degrees and not more than 90 degrees. Since the system of Tetsuya et al. is for a technology that does not produce a stable streamer discharge, there is no need to modify the discharge needle 16. It is unclear why one of ordinary skill in the art would be motivated to modify the system of Tetsuya et al with the claimed point angle

since Tetsuya et al is directed toward a type of discharge where it is unnecessary to limit the electrode shape.

Hammerstrom et al. does not remedy the deficiencies of Tetsuya et al. Hammerstrom et al. requires high frequency radio waves because it utilizes ***corona and silent discharge***. Furthermore, Hammerstrom et al. is not combinable with Tetsuya et al. because Hammerstrom et al. does not require limiting the electrode configuration, as disclosed in Tetsuya et al. Moreover, Son can not be combined with Tetsuya et al. because Son does not use a discharge needle, thus making the reference completely different from Tetsuya et al. and the present invention.

"The mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination." MPEP 2143.01 citing *In re Mills*, 916 F.2d 680, 16 USPQ2d 1430 (Fed. Cir. 1990) (Emphasis MPEP's own). Applicants respectfully submit that this motivation is lacking in the prior art of record.

In particular, applicant respectfully submits that one of skill in the art would not combine Tetsuya et al. with Hammerstrom et al. The treatment member 48 referred to in Hammerstrom et al. (at column 15, lines 8-15 and 33-53) is for a distributed plasma reactor illustrated in Figure 12. As can be seen from Figure 12 of Hammerstrom et al., the reactor is quite different from the reactor 10 of Tetsuya et al. Therefore, it is unclear why one of ordinary skill in the art would be motivated to modify the reactor of Tetsuya et al by using technology disclosed in the very different reactor of Hammerstrom et al.. Likewise, the system of Son is so different from Tetsuya et al. that it does not disclose a discharge needle.

Accordingly, the prior art of record lacks any suggestion or expectation of success for combining the patents to create the Applicants' unique plasma reactor and purification equipment.

More specifically, if the device of the Tetsuya et al. and Hammerstrom et al. or Son were some how modified to meet the claims of the present invention, it would require a complete reconstruction and would destroy the teachings of the references.

Moreover, Applicants believe that the dependent claims are also allowable over the prior art of record in that they depend from independent claim 1, and therefore are allowable for the reasons stated above. Also, the dependent claims are further allowable because they include additional limitations. Thus, Applicants believe that since the prior art of record does not disclose or suggest the invention as set forth in independent claim 1, the prior art of record also fails to disclose or suggest the inventions as set forth in the dependent claims.

Therefore, Applicants respectfully request that this rejection be withdrawn in view of the above comments and amendments.

Prior Art Citation

In the Office Action, additional prior art references were made of record. Applicants believe that these references do not render the claimed invention obvious.

Conclusion

In view of the foregoing amendment and comments, Applicants respectfully assert that claims 1-7 and 9-38 are now in condition for allowance. Reexamination and reconsideration of the pending claims are respectfully requested.

Respectfully submitted,

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